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38. (NEW) The loaded antenna of claim ~~27~~²⁸, wherein, due to the loading structure, the loaded antenna has a multiband behavior involving more operating bands compared to an identical antenna without the loading structure.

39. (NEW) A loaded antenna comprising:
a radiating element comprising a first part and a second part;
the first part comprising at least one conducting surface; and
the second part comprising a loading structure, the loading structure comprising at least one conducting strip connected at at least one point on an edge of the at least one conducting surface, the maximal width of the at least one conducting strip being less than a quarter of the longest straight edge of the conducting surface;

wherein the at least one conducting strip is shaped as a space-filling curve comprising at least ten segments connected so that no pair of adjacent segments defines a longer straight segment and, if the curve is periodic along a fixed straight direction of space, the period is defined by a non-periodic curve comprising at least ten connected segments and no pair of the adjacent and connected segments defines a straight longer segment; and

wherein the space-filling curve intersects with itself at most only at its initial and final point.

40. (NEW) The loaded antenna of claim 39, wherein a perimeter of the at least one conducting surface is polygonal in shape.

41. (NEW) The loaded antenna of claim 39, wherein at least a part of a perimeter of the at least one conducting surface is shaped as a space-filling curve.

42. (NEW) The loaded antenna of claim 39, wherein at least a portion of the at least one conducting surface is shaped as a multilevel structure.

43. (NEW) The loaded antenna of claim 39, wherein two tips of at least one of the at least one conducting strip are connected at two points on a perimeter of the at least one conducting surface.